

10,529,081

Amendments to the Claims

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1. (currently amended) An electromagnetic actuating device actuator, comprising:

~~an armature (20) which is provided in a housing (10) in such a way that it can be moved~~ movable in an axial direction relative to a magnet frame ~~(12) consisting of including a core section (14) and a yoke section; (18),~~

~~and a coil device (24) which can be subjected to an electrical current in order~~ electrically energized to generate the movement, move said armature;

~~wherein the said magnet frame is designed in a being hollow-cylindrical manner in such a way that it in configuration and at least partially surrounds the surrounding said armature, and comprises said magnet frame including an intermediate section (16) consisting of comprising non-magnetic material between the said core section and the said yoke section, there being a first connection interface between said yoke section and said intermediate section and a second connection interface between said intermediate section and said yoke section; and~~

~~characterized in that~~

~~a permanent material connection is established in at least one of the cross-over areas (28) between the yoke section and the intermediate section and between the intermediate section and the core section by means of a friction welding method connection interfaces comprising a friction weld.~~

2. (currently amended) The device actuator as claimed in of claim 1, ~~characterized in that the wherein at least one of said yoke section and/or the and said core section comprises a cone shape (32) has a frustoconical profile at an end facing the said intermediate section.~~

3. (currently amended) The device actuator as claimed in of claim 2, ~~characterized in that the cone shape (32) wherein the frustoconical profile merges in a truncated manner into a~~

flat annular section ~~(34)~~ which runs lies in a plane perpendicular to the axial direction.

4. (currently amended) The device actuator as ~~claimed in any of claims 1 to 3 of claim 1~~, characterized in that the ~~wherein said intermediate section (16) is designed as an annular and/or hollow cylindrical or solid cylindrical~~ a tubular element which, at an end facing the said yoke section, ~~and/or the said core section, or both~~, ~~comprises a cone shape~~ has a frustoconical profile adapted to the respective end of the said yoke section ~~and/or or~~ core section.

5. (currently amended) The device actuator as ~~claimed in any of claims 1 to 3 of claim 1~~, characterized in that the ~~wherein said intermediate section (16) is designed as an annular and/or hollow cylindrical or solid cylindrical~~ a tubular element which, at an end facing the said yoke section, ~~and/or the said core section, or both~~, ~~comprises a cylinder shape~~ is flat and adapted to the respective end of the said yoke section ~~and/or or~~ core section.

6. (currently amended) The device actuator as ~~claimed in any of claims 1 to 5 claim 1~~, characterized in that the ~~wherein said yoke section and the said intermediate section are formed in one piece from non-magnetic material.~~

7. (currently amended) A method for manufacturing a magnet frame for an electromagnetic actuator, the magnet frame comprising including a core section, ~~(14)~~ and a yoke section ~~(18)~~ and also a non-magnetic intermediate section ~~(16)~~ lying therebetween between the core and yoke sections, ~~for an electromagnetic actuating device, in particular the electromagnetic actuating device as claimed in any of claims 1 to 6, by establishing in each case making~~ a permanent connection between the core section and the intermediate section as partners

mating elements of a first cross-over connection interface and between the yoke section and the intermediate section as partners mating elements of a second cross-over connection interface, characterized by the steps said method comprising:

~~—setting rotating one of the partners mating elements of the first cross-over connection interface, and/or of the second cross-over connection interface, or both; in a rotary movement at a predefined rotary speed,~~

~~[[—]] pressing the respective other partner mating element of the first or second cross-over connection interface against the rotating partner mating element in order to give rise to effect frictional heating which plasticizes the surface of the intermediate section in the pressing region pressed against the surface of the core section or the yoke section;~~

~~[[—]] stopping the rotary movement rotation; and~~

~~[[—]] pressing the partners mating elements against one another with a predefined compression force in order to produce a welded cross-over connection interface.~~

8. (currently amended) The method as claimed in claim 7, characterized in that which comprises producing the first cross-over connection interface and the second cross-over connection interface are produced at the same time.

9. (currently amended) The method as claimed in claim 7, characterized in that which comprises producing the first cross-over connection interface and the second cross-over connection interface are produced sequentially.

10. (currently amended) The method as claimed in any of claims 7 to 9 ~~claim 7~~, characterized in that the predefined rotary speed of the rotary movement is set to which comprises rotating one of the mating elements of the first connection interface, the second connection interface, or both at a

rotational velocity within a range between 1500 and 2500

revolutions per minute; wherein min^{-1} and/or

pressing takes place with a pressure of between 50 and
250 N/mm^2 ; and wherein and/or

the mating elements are pressed against one another
with a compression force as pressure is set to within a range
between 80 and 300 N/mm^2 .

11. (canceled)

12. (new) The actuator of claim 2, wherein said intermediate section is designed as a tubular element which, at an end facing said yoke section, said core section, or both, has a frustoconical profile adapted to the respective end of said yoke section or core section.

13. (new) The actuator of claim 3, wherein said intermediate section is designed as a tubular element which, at an end facing said yoke section, said core section, or both, has a frustoconical profile adapted to the respective end of said yoke section or core section.

14. (new) The actuator of claim 2, wherein said intermediate section is designed as a tubular element which, at an end facing said yoke section, said core section, or both, is flat and adapted to the respective end of said yoke section or core section.

15. (new) The actuator of claim 3, wherein said intermediate section is designed as a tubular element which, at an end facing said yoke section, said core section, or both, is flat and adapted to the respective end of said yoke section or core section.

16. (new) The method claim 8, which comprises rotating one of the mating elements of the first connection interface, the second connection interface, or both at a rotational velocity within a range between 1500 and 2500 revolutions per minute; wherein

pressing takes place with a pressure of between 50 and 250 N/mm²; and wherein

the mating elements are pressed against one another with a compression force within a range between 80 and 300 N/mm².

17. (new) The method claim 9, which comprises rotating one of the mating elements of the first connection interface, the second connection interface, or both at a rotational velocity within a range between 1500 and 2500 revolutions per minute; wherein

pressing takes place with a pressure of between 50 and 250 N/mm²; and wherein

the mating elements are pressed against one another with a compression force within a range between 80 and 300 N/mm².